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SCIENCE

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INAUGURAL ADDRESS OF THE PRESIDENT OF THE UNIVERSITY OF MINNESOTA¹

THE ceremonies of this hour mark not so much the coming of a man as the beginning of a new phase in the life of the university. In the sweep of time most men are merged in the on-going human tide. It is wise, therefore, to look beneath the formal and the personal; to ask what this occasion really means or what it ought to mean.

Of one thing there can be no doubt. This day sees the passing of a personal leadership, although happily not the waning of that personal influence. Not all mortals are destined to be engulfed in the nameless millions of mankind. A few outstanding men can not be forgotten. "An institution," said Emerson, "is but the lengthening shadow of one man." Minnesota, in this sense, will be the lengthening shadow of Cyrus Northrop. Such unity as the university has found is due almost wholly to the fusing power of his winning and guiding personality. The university stands a living tribute to the quick sympathy, humorous tolerance, harmonizing tact, alert intelligence and moral earnestness of its president emeritus. He had to convince an often skeptical outside public; he had to moderate and adjust keen rivalries within the institution. Colleges and departments sought their own ends with only a faint glimpse of the university as a whole. As he lays down the burden of twenty-seven years he leaves the institution firmly grounded in the good will of the people, and unified by the loyalty of faculty, alumni and students. We should

¹ From the *Minnesota Alumni Weekly*.

sadly miss the meaning of this day did we fail to turn our grateful thoughts toward Cyrus Northrop and to wish him many years of serenity and happiness. Unlike Macbeth, he has

. . . that which should accompany old age,
As honor, love, obedience, troops of friends.

To-day the university sets its face toward a new regime. No man can take the unique place of its second president. The burden must rest on many men and women, who, as comrades, take up the task. The gains of the personal ascendancy that has passed must be capitalized. Cooperation, organization, team-play, are keynotes for the coming years. An institutional period is at hand. Loyalty must look to purposes rather than to a person. Leadership will consist in carrying out policies which many have helped to formulate. Regents, faculties, alumni, students—all citizens, must see the institution more vividly as a noble trust to be administered for the common good. This spirit of cooperation can be aroused only by a compelling vision of the university seen as an organ of the higher life of the commonwealth. And this ideal must get its setting in some inspiring philosophy of the state.

Mr. H. G. Wells tells us that we, as a nation, suffer from "state blindness." "The typical American," he says, "has no 'sense of the state.' I do not mean that he is not passionately and vigorously patriotic. But I mean that he has no conception that his business activities, his private employments, are constituents in a large collective process; that they affect other people and the world forever, and can not, as he imagines, begin and end with him."

Even our friendly critic, the British ambassador, takes much the same view. "The state," declares Mr. Bryce, "is not to them (Americans), as to Germans or Frenchmen, and even to some English

thinkers, an ideal moral power, charged with the duty of forming the characters and guiding the lives of its subjects. It is more like a commercial company, or, perhaps, a huge municipality created for the management of certain business in which all who reside within its bounds are interested. . . ." This individualistic, "stock company" theory of the commonwealth is neither ennobling in itself nor does it afford a sound basis for a state-supported university. We may paraphrase Mr. Joseph Chamberlin on the British Constitution, and thank God that our institutions are not logical. This philosophy would almost reduce the university to a machine for turning out persons equipped at public expense for getting a living out of the citizens who had been already taxed to train their exploiters. On this basis it is hard to see why the state should give privileges to a few at the expense of their fellows. Even the "antidote against ignorance" philosophy leaves the imagination cold. This is only a sublimated form of the policeman theory. Obviously we need some other conception of the state if we are to escape cynicism about both our social system and our public higher education.

But we can not admit that Mr. Wells and Mr. Bryce have quite made out their case. There are signs of change in the feeling of Americans toward the state. Especially in the middle and the far west do we note a keener recognition of collective interests and purposes. There is a quickened feeling of team-play, a clearer "sense of the state," which is thought of not in a merely political way, but is looked at as a social life with common aims. The people of a state have learned to work together to protect natural resources, to foster agriculture, to safeguard public health, to regulate industry and commerce, to improve the highways, to care for the defective and de-

pendent, to promote education. They have done these things sometimes through the machinery of government, sometimes through unofficial groups. All this community activity has inevitably changed the picture of the state in the minds of its citizens. The commonwealth emerges as something far nobler than a stock company run for the profit of its shareholders. It does become "an ideal moral power," a larger life in which men and women realize more fully their best selves, and to which they give something that will endure for all time. The state is coming to stand for a common life which seeks to gain ever higher levels of efficiency, justice, happiness and solidarity.

In a picture like this the state university finds both setting and sanction. It becomes an instrument of the general purpose, a training place of social servants, a counsellor of the commonwealth, a source of knowledge and idealism. It is ^{this} vision which must fascinate and ~~control~~ the men and women who are to-day taking up anew the responsibility for this institution. Arnold Toynbee once said: "Enthusiasm can only be aroused by two things, first, an ideal which takes the imagination by storm, and second, a definite, intelligible plan for carrying this ideal out into practice." Here is the whole philosophy of successful effort. Many an ideal comes to naught because it lacks the right means of expression. Many a well-laid plan misses the emotional energy aroused by a vision. Emerson's Oxford don whose philosophy read: "Nothing new, nothing true, and no matter" was not of those who bring things to pass. We do well to-day to catch a glimpse if we can of the university that ought to be, with the hope that it may "take our imaginations by storm" and urge us to devise "definite and intelligible" plans for action.

Francis Bacon had a dream to which we turn for a moment. In his "New Atlantis" he pictured an ideal commonwealth organized about a Solomon's House or "College of the Seven Days Works." This college "sought the knowledge of causes and secret motions of things, the enlargement of the bounds of human empire to the effecting of all things possible." The equipment of the college was complete. There were caves and mines for the study of metals, minerals and cements; towers for celestial observations; lakes for the breeding of fish; animal houses for biological experiment; orchards and gardens in which the wonders of Burbank were anticipated; parks for studying beasts and birds; kitchens for making predigested foods and health-giving drinks; operating rooms in which animal vivisection threw light on human diseases; dispensaries for medicine; laboratories for physical experiments; shops where flying machines and submarines were made; collections of minerals; sound houses, mathematical laboratories, and even a "house of the deceit of the senses" in which wonders were first wrought and then explained to a bewildered public.

But more important than the equipment was the staff. The "College of the Seven Days Works" was dedicated to research. Twelve "merchants of light" traveled the world over in search of books, apparatus, and all the latest discoveries. Three men collated these materials. Three others verified all reported experiments. Still another three known as "pioneers" or "miners" undertook new investigations, the results of which were passed on to three compilers. All discoveries that had practical utility were applied to daily life by "dowry men" or "benefactors." Not yet content, the college pushed its researches further. Three "lamps" as they

were happily called—"search-lights would be the word to-day"—projected still more penetrating inquiries which were carried out by expert "inoculators." The last step was taken by the "interpreters of nature," who sought to translate into terms of human happiness and destiny all the knowledge that their colleagues had discovered. Moreover, the "College of the Seven Days Works" did not rest content with finding truth. It put this at the service of all citizens. Were it not for its quaint form this passage might have been taken from the announcements of one of our own universities:

"Lastly we have circuits or visits of divers cities of the kingdom; where, as it cometh to pass, we do publish such new, profitable inventions as we think good, and do also declare natural divinations of diseases, plagues, swarms of hurtful creatures, scarcity, tempests, earthquakes, great inundations, comets, temperature of the air, and divers other things; and we give counsel thereupon, what the people shall do for the prevention and remedy of them."

Thus, early in the seventeenth century, we have a foreshadowing of the essential ideals of the modern university—equipment for investigation and instruction in every field of human knowledge, a staff trained and set apart as a priesthood of truth, giving themselves devotedly to their high calling, and finally a wide diffusion to all citizens of the knowledge, skill and idealism of which the university is a center and a source. We are only beginning, however, to see the need for a more effective and economical organization of research. This dream of Bacon's made more democratic, widened in scope and spirit, is yet the same as that of Huxley, who believed that universities "should be places in which thought is free from all fetters and in which all sources of knowledge and

all aids to learning should be accessible to all comers without distinction of creed, or country, riches or poverty."

Let us glance rapidly at the chief things that combine in the university ideal which we would fix in our minds to-day. If the phrase "glittering generalities" dampens our ardor, we may take courage from Emerson's spirited retort, when Choate applied these words to the lines of the Declaration of Independence. "Glittering generalities!" cried the Sage of Concord, "they are blazing ubiquities!"

The picture of the state as a collective life, which seeks common ends by concerted effort, makes the state university a means of social efficiency and progress. The older individualistic theory no longer satisfies even those who put their faith in private initiative and responsibility. The university aims first of all to serve the commonwealth through individuals, not to offer personal privilege at state expense. Alma Mater is of a Spartan type, and trains her sons and daughters for work and for life. She must teach the robust gospel that "It is the one base thing to receive and not to give." She must insist that "Life is not a cup to be drained, but a measure to be filled." For the old aristocratic ideal of *noblesse oblige* she substitutes the sentiment *largesse oblige*. Acceptance of public aid may make a pauper or an ingrate or a loyal servant of the state. If tax-supported higher education is to be justified it must see itself and make the people see it as an instrument of the common life, and not an agency of privilege.

The first president of Johns Hopkins University was fond of saying that buildings are but the shell of the university; its real life lies in its men. He was proud of the fact that at the very outset an eminent physicist like Rowland used a kitchen as his laboratory. Only great men and wo-

men can make a university great. Better inspired investigators and teachers in barracks than a staff of industrious mediocrity in marble palaces. Best of all, alert, well-trained, high-minded scholars in serviceable buildings with adequate equipment. If, however, a choice must be made, it should never hesitate between men and materials. The university which is true to its ideals will draw and hold an able staff by salaries that banish petty anxiety, by freedom from drudgery, by opportunities for research and public service, and by dignifying recognition. No institution that thinks of investigators and teachers as employees is likely to secure any but the drudges of the profession.

"Enthusiasm for truth, that fanaticism of veracity," which Huxley deemed "a greater possession than much learning" is the very life of a true university. No modern "College of the Seven Days Works" can hope to keep itself alive and fruitful unless some of its members are ceaselessly engaged upon the unsolved problems. No ingenious machinery of scholarship, no mere pedantry which, as a wit has said, "never takes a step without leaving a footnote," can take the place of the genuine passion for new truth. The ideal university will not deceive itself or others by any perfunctory simulation of research. It will seek men who have the dauntless "fanaticism of veracity."

"The teaching at the ideal university," declares Birrell, "is without equivocation and without compromise. Its notes are zeal, accuracy, fullness and authority." It is hard to keep the functions of teaching and investigation in equal honor. Where research is exalted instruction is too often lightly esteemed. The "mere teacher" as the patronizing phrase runs, suffers in rank and salary and social status. In the university of our dreams the noble calling

of imparting truth, stimulating reflection and kindling enthusiasm will be held in high repute. But the two types will not be too sharply contrasted, for he who teaches "with zeal, accuracy, fullness and authority" must refresh himself constantly at the sources of knowledge, while no man who pushes forward the frontiers of science can fail to impart with zest to at least a small group of followers the new truth that he has discovered. The two types must hold each other in respect and honor, and both must be held up for admiration by their colleagues.

In an ideal university students should be treated not as subjects, but as citizens of the republic of letters and science. Students have not always been in pupilage. Frederick Barbarossa conferred such powers upon the students of Bologna that they not only lorded it over the towns-folk, but we are told "reduced the latter (professors) to a position of humble deference to the very body they were called upon to instruct." To admit students to academic citizenship, however, is not to surrender to them control of the university. It is simply to emphasize their share in the community life; to fix upon them responsibility and to afford that training in corporate self-control—the selection of leaders, the creation of standards, the conformity to these—which is the very essence of democracy. The university must hark back to the mediæval ideal of a "*Universitas magistrorum et studentium*"—a corporation of teachers and scholars. The alumni, too, must feel themselves a part of this corporation. They do not, as at the English universities, legally control, but actually they have great power and responsibility. They will not be mere praisers of the past, and resent change because the memories of their undergraduate days have been embalmed in sentiment. On the con-

trary they will often take the initiative in new movements. They will report impressions gathered as they mingle with the people of the state; they will feel not only free, but in duty bound to make suggestions; they will make it a point to know what the university is aiming at, and will help to interpret the institution to the state. The alumni will frequent the only lobbies that the university can afford to enter, the daily converse of citizens and the agencies of publicity. And all this the alumni can do effectively only through an organization which will cooperate heartily with the other members of the university community.

If a people is not to perish mentally and spiritually it must be steadily refreshed by streams of thought and idealism. Of these the university strives to be a perennial source. Unless graduation is a mockery hundreds of men and women go forth each year to diffuse throughout the commonwealth the ideas and attitude toward life which they gained from their college training. The value of all this must be as real as it is intangible. Mathew Arnold has described the effect of such diffusion of ideas in speaking of "this knowledge turning a stream of fresh and free thought upon our stock notions and habits, which we now follow staunchly but mechanically, vainly imagining that there is a virtue in following them staunchly which makes up for the mischief of following them mechanically." If a state is to be flexible and escape the bonds of habit and custom it must be constantly revived. In this service the university must play a leading part.

The university campus must be as wide as the boundaries of the commonwealth. The term university extension comes to us from the aristocratic centers of Cambridge and Oxford. There is about it a faint suggestion of the missionary spirit—just a

hint of patronage and condescension. Of this spirit there must be no trace in a state university. Where truth is to be discovered or applied, wherever earnest citizens need organized knowledge and tested skill, there the university is on its own ground. Our ideas of time and space are changing rapidly; traditional prejudices are disappearing. The university sees as its members not only the students who resort to the chief center, but the other thousands on farms, in factories, in offices, in shops, in schoolrooms and in homes who look to it for guidance and encouragement. It is fascinating to picture the possibilities of this widening sphere of higher education as it makes its way into every corner of the state, frankly creating new needs and resourcefully meeting the consequent demands.

To find exceptional men and women, to train them for service, to fit them for leadership, to fill them with zeal for truth and justice, is the one great aim of the university. "The mind which keeps the mass in motion," said Godkin, "would most probably, if we could lay bare the secret of national vigor, be found in the possession of a very small proportion of the people, though not in any class in particular, neither among the rich nor the poor, the learned nor the simple, capitalists nor laborers. . . ." Society must see to it that this vivifying mind comes to its own. Aristocracy draws its leadership from a caste; democracy from every group of the people. The state university should be accessible to all who give unusual promise, whether they have private means or not. Cecil Rhodes left a fortune to make Oxford for all time a Mecca for successive scores of American youth. Surely, large-minded men of wealth, local communities, some time, perhaps the state itself, will endow scholarships which will draw to our uni-

versities exceptional young men and women from every county of the commonwealth. This would be a statesman-like, far-seeing thing to do. The experience of Scotland and England for three centuries has its lesson. The hardy north has contributed to the United Kingdom men well beyond its per capita quota. This outstripping of England is to be credited largely to the democratic education of Scotland in contrast with the caste system of England. Huxley in an address at Aberdeen, thus pictures the two types: After speaking in tolerant vein of "The host of pleasant, manly, well-bred young gentlemen who do a little learning and much boating by Cam and Isis," he goes on to say, "when I turn from this picture to the no less real vision of many a brave and frugal Scotch boy spending his summer in hard manual labor that he may have the privilege of wending his way in autumn to this university with a bag of oatmeal, ten pounds in his pocket and his own stout heart to depend on through the northern winter; not bent on seeking

'the bubble reputation at the cannon's mouth,'

but determined to wring knowledge from the hard hands of penury; when I see him win through all such outward obstacles to positions of wide usefulness and well-earned fame, I can not but think that in essence Aberdeen has departed but little from the primitive intentions of the founders of universities." The individual side of the picture has its appeal, but its social aspect is after all more significant. From the university towers the searchlights must be ever sweeping country-side, village, town and city for the "minds which keep the mass in motion."

Standards of truth, skill, taste, efficiency are the capitalized experience of society, essential to stability and progress. Of

these standards the university is one of the guardians. To these, come what may, it must be true. No sympathy for individuals, no pressure of influence, no fear of retaliation, no desire for numbers must weaken fidelity to standards. Freedom of research, freedom of teaching, high ideals of productive scholarship and of professional integrity, conscientious and fearless appraisal of students' work are of vital concern to the university and to the state it serves. To help to refine and raise these standards, to adjust them more nicely to social needs, to fix these values in public opinion, is a duty of the ideal university.

In the striking phrase of President Van Hise, the university must aim at being the "expert adviser of the state." How stirring the thought of a well organized and efficiently manned center of knowledge, skill and wisdom, holding itself at the disposal of every constructive interest and activity of the community, and ready to concentrate upon their problems the sifted experience of all the world. In this responsiveness the true university expresses its purpose and spirit. It is a bureau of information, the stored memory of civilization, an alert investigator of new facts; it is a friendly and at the same time a disinterested counsellor. It is pathetic to see men, isolated from the wisdom of the centuries and of their own times, hopefully assailing the ever recurring problems of life. The waste of effort, the futility of duplicating errors, cry out for aid. The opportunities for service multiply with each year. We are coming to realize that good farming is no longer a robbing, but a recompensing of the soil; that it costs as much to plant bad seed as good; that sometimes cows are pensioners instead of producers; that bad highways are the heaviest road tax; that cheap schools are the most expensive; that public health is

national capital; that juvenile delinquency comes less from depravity than from deprivation; that industrial accidents are not lawyers' perquisites, but costs of production; that all idleness is not due to indolence; that social legislation is not an amiable avocation, but an exacting profession; that municipal government should not be so skilfully designed to prevent bad men from doing harm, that it keeps honest and efficient men from doing good; that the United States must trust less to a "manifest destiny" and more to a constructive purpose. In these changes of theory and method there is need of accurate knowledge, carefully interpreted experiment and authoritative advice. If the university is true to its mission it will put all of its resources and its trained experts at the service of the community. Amid the conflicts and rivalries of many interests, parties, sects, sections, professions, social groups, the university must never waver from the position of an unimpassioned, unprejudiced seeker for the truth, all of it and that alone. This responsibility is not to be assumed lightly. Mistakes are costly in public confidence. Eternal vigilance is the price of prestige. The discomfiture of the expert gives joy to the average citizen. The ideal university must, therefore, be true to the most rigorous laws of scientific method if the institution is to gain and hold its place as the "expert adviser of the state."

By virtue of its rôle as a public servant the university is under peculiar obligation to cooperate with all the other agencies of the state, its commissions, boards and institutions. These should turn naturally to the university for expert advice and for trained functionaries. So, too, the many private associations, charity organizations, societies, playground associations, social settlements, juvenile protective leagues,

public art societies, study clubs, and other similar groups should find the university ready to meet them more than half way. With the educational forces of the state the university should be in close terms of sympathy and effective team-play. The elementary schools are not to be deemed beneath the notice of higher education. On the contrary, the university should be a leader in studying painstakingly the problems of the common schools. It can not afford to be indifferent to the broad base of the educational pyramid. That the university is vitally interested in the high schools says itself. Yet this interest must not take the form of either patronage or dictation. The days for these things have passed. With the high schools in charge of college-bred men and women condescension is intolerable. Since the high school, in the west at least, is recognized as the "people's college," to assign it to the rôle of an obedient preparatory school is out of the question. Nevertheless, the high school needs the university as a friend and counsellor. The relations between the high schools and the university should become closer through the association of all that are interested in the same subjects of instruction, by periodic conferences at the university, by visits not only of college teachers to high schools, but of high school instructors to college class-rooms, by joint committees which shall study the educational system as a whole. To the normal schools the university has held an anomalous relation. These institutions were founded to prepare teachers for the common schools. Of late college training has become virtually a prerequisite for high school appointments. The normal schools have been attended by growing numbers who expect to go on to college. At the same time the demand for training in the natural sciences, modern psychology, in-

dustrial arts, home economics (just now agriculture is seeking admission), has compelled the schools to widen their curricula and strengthen their teaching force. In these circumstances the idea of some readjustment inevitably arises. The university is in duty bound to confer with the normal schools and to seek a wise solution for the problem. So, too, with the private colleges of the state, the university must be on the friendliest terms. Close relations between these colleges and the professional schools of the university should be established, so that there may be no semblance of compulsion as to the place of collegiate preparation. The true unity of the state educational system consists not in official machinery, but in a spirit of mutual understanding, respect and good will among the men and women to whom the educational interests of the state are entrusted.

The spirit of cooperation is more palpable than another influence which should radiate from the university. And that is the scientific spirit. This is an attitude of open-mindedness toward all truth, a determination to get all the essential facts before forming a judgment, a willingness to abandon a position when it is no longer intellectually tenable; a tolerance for the opinions of others which are to be accounted for rather than derided or denounced. This spirit is free from acrimony, blind partisanship and prejudice. In a world of eager activity, of personal ambition, of keen group rivalry, of clashing interests, with all the consequent bitterness and misrepresentation, it is the duty of the university both in its methods and in its personnel to set a shining example of that calm, fair-minded, tolerant spirit that seeks the truth which makes men free.

"The benefits the country derives from the university," wrote Mr. Godkin thirty years ago, "consist mainly in the refining

and elevating influences they create, in the taste for study and research which they diffuse, in the social and political ideals which they frame and hold up for admiration, in the confidence in the power of knowledge which they indirectly spread among the people, and in the small though steady contribution which they make to the reverence for 'things not seen' in which the soul of the state may be said to lie, and without which it is nothing better than a factory or an insurance company." There is no mention in all this of direct utility through professional training or industrial efficiency. The editor of the *Nation* would, perhaps, have repudiated these things as Mr. Birrell did in an address he gave to a body of London students. "The education it (the university) essays to give will not teach you to outgabble your neighbor in the law courts, to unseat him in his constituency or undersell him in the market-place. Gentlemen, be it understood once for all, those things do not require a university education. The commonwealth may safely leave these to be performed by the combination of the three primary forces, ambition, necessity and greed." Of our own Cornell University in its early years the author of "Culture and Anarchy" wrote: It "seems to rest on a misconception of what culture truly is, and to be calculated to produce miners, or engineers, or architects, not sweetness and light." Here are pertinent questions. Can the state safely leave to "ambition, necessity and greed" the training of its professional men and its leaders? Has it no place for culture, for what Arnold read into Swift's phrase "sweetness and light"? In its eagerness for valuable knowledge and practical efficiency is the university neglecting "the things that are more excellent"? Is it losing reverence for "things unseen"? Of this there is always

danger. Action and tangible results that appeal to men so strongly are often at odds with reflection and spiritual values. The ideal university must not forget that material efficiency is only a means to ends—a finer type of personality, a more just and ennobling social order. The university aims at training, not skilled exploiters, but men and women who shall first of all be high-minded citizens with a loyal “sense of the state,” who shall exemplify the scientific spirit, bear themselves gallantly in life’s struggles, show themselves possessed of satisfying mental resources, and prove faithful to the highest standards.

Men and women of this sort do not issue from a place given over wholly to utility and material interests. There must be a controlling, pervasive spirit of service, a desire for “a harmonious expansion for *all* the powers which make the beauty and worth of human nature,” and a real appreciation of life’s deeper meaning. The university must help men to answer Kant’s three questions, the questions of science, of morality, and of religion: “What can I do? What ought I to do? What may I hope for?” True, the state university can have no official theology and no ecclesiastical affiliations. But it may have a spirit of reverence for the mysteries of life; it may cultivate that essential religion which exalts the things of the human mind and spirit over things physical and which reads back of the material world a purpose and a destiny. “The state,” said Arnold, “is of the religion of all of its citizens, without the fanaticism of any of them.” Bacon’s “College of the Seven Days Works” was a research institution, but it did not forget that it was concerned with only certain aspects of a vast university. “We have,” said one of the staff, “hymns and services of laud and thanks to God for His marvelous works, and forms of prayer imploring

His aid and blessing for the illumination of our labors and the turning of them unto good and holy uses.”

We have caught glimpses of the university ideal. May this, as the years pass, grow ever clearer, nobler, more inspiring. May it take our “imagination by storm” not as an evanescent emotion, but as a persistent vision. We remember Toynbee’s words, “a definite intelligible plan for carrying that ideal out into practice.” It is to the many details of this plan that as colleagues we are to address ourselves. May we take up this great task with a solemn sense of what it means. We must not deceive ourselves. We advance to no easy triumphs. We must cherish no millennial dreams. We must have faith that good-will guided by wisdom will in the end bring our vision to pass. Let us then with sober judgment and steady courage pledge anew our loyalty to the ideals of the university, to the people of the state and to that republic of science, letters and the arts which knows no national boundaries. May each of us take to heart the counsel of Goethe:

What each day needs, that shalt thou ask;
Each day will set its proper task.
Give others’ work just share of praise;
Not of thine own the merits raise;
Beware no fellow man thou hate;
And so in God’s hands leave thy fate.

GEORGE E. VINCENT

THE NEW ZOOLOGICAL LABORATORY OF THE UNIVERSITY OF PENNSYLVANIA

IN devising and planning this laboratory to fill the needs for many years to come of zoological study at the University of Pennsylvania, zoology has been construed in its broadest sense, as the science of animal life. All, therefore, it was considered, should be included that would allow of the prosecution of study in any branch of this great and most important subject; and this object we have